PART NO. W4FG-E-00

HITACHI

Workshop Manual

ZW

80

90

Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TO4FG-E
Technical Manual (Troubleshooting)	: Vol. No.TT4FG-E
Workshop Manual	: Vol. No.W4FG-E
Axle Service Manual (ZX80)	: Vol. No.KM-111174-E
Axle Service Manual (ZX90)	: Vol. No.KM-112340-E

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Publication W4FG-E-00

Order the manual at mid-west-tech.com >

TIGHTENING TORQUE

The bolts and the nuts of the machine: Standard Tightening Torque Chart

	Retightening Portion		Bolt Diameter	Q'ty	Tool Wrench Size	Torque N·m (kgf-m, lbf-ft)
1	Front axle mounting nut	Lock nut	18	8	27	207 to 253 (21.1 to 25.8, 153 to 187)
		Nut		8		*259 to 316 (26.4 to 32.2, 191 to 233)
2	Rear axle / reduction gear mounting nut		20	4	30	*491 to 600 (50.0 to 61.2, 362 to 443)
3	Wheel rim mounting nut		22	32	32	494 to 604 (50.4 to 61.6, 365 to 446)
4	Propeller shaft mounting bolt		10	16	17	*58 to 71 (5.9 to 7.2, 43 to 52)
5	HST motor shaft mounting bolt		16	4	24	186 to 227 (19 to 23, 137 to 168)
6	HST pump mounting bolt		18	4	27	265 to 314 (27 to 32, 196 to 232)
7	Engine mounting bolt; Bracket	Front	12	8	19	*83 to 93 (8.5 to 9.5, 61.3 to 68.6)
		Rear	14	8	22	*122 to 149 (12.4 to 15.2, 90 to 110)
8	Engine mounting bolt; Cushion rubber		18	4	27	343 to 412 (34.9 to 42.0, 253 to 304)
9	Muffler mounting nut;	Luck nut	10	4	17	20 to 24 (2.0 to 2.4, 14.8 to 17.7)
		Nut		4		44 to 54 (4.5 to 5.5, 32.5 to 40)
10	Counterweight mounting bolt		20	4	30	423 to 460 (43.1 to 46.9, 312 to 339)

LOCTITE #262 is applied to the tread portion marked * in torque field.

NOTE: 1: Apply lubricant to nuts and bolts to reduce their friction coefficients when tightening.
(Example: White zinc B dissolved into spindle oil)
2: Make sure bolt and nut threads are clean before installing.

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >

	Retightening Portion		Bolt Diameter	Q'ty	Tool Wrench Size Size	Torque N·m (kgf-m, lbf-ft)
11	Top center pin;	Mounting Nut	24	1	36	*155 to 314 (26.0 to 32.0, 188 to 232)
		Retainer Lock	12	4	19	*77 to 94 (7.9 to 9.6, 56.8 to 69.4)
		Lock	12	1	19	*77 to 94 (7.9 to 9.6, 56.8 to 69.4)
12	Bottom center pin lock		12	1	19	77 to 94 (7.9 to 9.6, 56.8 to 69.4)
13	Loader front pin lock		12	13	19	77 to 94 (7.9 to 9.6, 56.8 to 69.4)
14	Steering cylinder pin lock		12	4	19	77 to 94 (7.9 to 9.6, 56.8 to 69.4)
15	Radiator frame mounting bolt		12/10	4/8	19/17	77 to 94 (7.9 to 9.6, 56.8 to 69.4)/44 to 54 (4.5 to 5.5, 32.5 to 39.9)
16	Cutting edge mounting nut		16	7	24	245 to 300 (24.9 to 30.6, 181 to 221)
17	Canopy mounting bolt		16	6	24	188 to 229 (19.2 to 23.4, 139 to 169)
18	Cab cushion rubber		16	10	24	188 to 229 (19.2 to 23.4, 139 to 169)

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >

TORQUE CHART

CAUTION: Use tools appropriate for the work to be done. Makeshift tools and procedures can create safety hazards. For loosening and tightening nuts and bolts, use correct size tools. Otherwise, tightening tools may slip, potentially causing personal injury.



SA-040

Bolt Types

Tighten nuts or bolts correctly to torque specifications. Make sure to employ correct bolts and tighten them correctly when assembling the machine or components.

Specified Tightening Torque

Bolt Dia. (mm)	Hexagon Wrench 6.4						Wrench Size mm
	Standard torque			Allowable torque range			
	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	
4	1.27	0.13	0.94	1.18 to 1.37	0.12 to 0.14	0.87 to 1	7
5	2.55	0.26	1.88	2.26 to 2.84	0.23 to 0.29	1.67 to 2.1	8
6	4.31	0.44	3.18	3.92 to 4.71	0.40 to 0.48	2.9 to 3.48	10
8	10.2	1.04	7.53	9.22 to 11.2	0.94 to 1.14	6.8 to 8.27	13
10	19.7	2.01	14.5	17.8 to 21.7	1.81 to 2.21	13.2 to 16	17
12	34.5	3.52	25.5	31.1 to 38.0	3.17 to 3.87	23 to 22.1	19
14	54.3	5.54	40.1	48.9 to 59.7	4.99 to 6.09	36.1 to 44.1	22
16	83.9	8.56	61.9	75.5 to 92.4	7.70 to 9.42	55.7 to 68.2	24
18	116	11.8	85.6	104 to 127	10.6 to 13.0	76.8 to 93.7	27
20	168	17.1	124	151 to 184	15.4 to 18.8	111 to 136	30
22	221	22.5	163	199 to 243	20.3 to 24.8	147 to 179	32
24	280	28.6	207	252 to 309	25.7 to 31.5	186 to 228	36
27	346	35.3	255	312 to 380	31.8 to 38.8	230 to 221	41
30	475	48.4	351	428 to 522	43.6 to 53.2	316 to 385	46

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >

Disassembly

1. Remove rod (8) and boot (9) from cylinder (4).
2. Remove snap ring (7) from cylinder (4).

NOTE: When removing retaining ring (7), remove piston assembly (6) while pushing piston assembly (6) with rod (8).

3. Remove stop plate (10) from cylinder (4).
4. Remove piston assembly (6) and spring (5) from cylinder (1).
5. Remove clamp (3) from filler union (1). Remove filler union (1) from cylinder (4).
6. Remove O-ring (2) from cylinder (4).

Assembly

IMPORTANT: Before assembling, apply hydraulic oil onto parts in order to prevent them from seizing.

1. Install O-ring (2) to cylinder (4).
2. Connect filler union (1) to cylinder (4) with clamp (3).
   : 1.95 to 2.94 N·m
   (0.2 to 0.3 kgf·m, 1.43 to 2.17 lbf·ft)
3. Install spring (5) and piston assembly (6) to cylinder (4).
4. Install stop plate (10) to cylinder (4).
5. Install retaining ring (7) to cylinder (4).

NOTE: When installing retaining ring (7), install piston assembly (6) while pushing with rod (8).

6. Install rod (8) and boot (9) to cylinder (1).

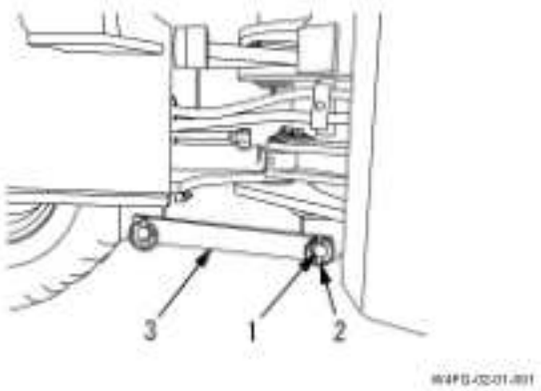
MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >

REMOVAL AND INSTALLATION OF PRIORITY VALVE

CAUTION: In order to release the hydraulic pressure in the steering hydraulic circuit, stop the engine and turn the steering wheel to the right and the left several times. The steering wheel turns heavily when the hydraulic pressure is released.

Preparation

1. Park the machine on a level and solid surface. Operate the steering cylinder to the stroke end and lower the bucket onto the ground horizontally.
2. Place wheel stoppers in front of and behind the wheels in order to secure the machine.
3. Install articulate lock bar (3) to rear frame pin (1). Secure with link pin (2).



4. Remove the inspection cover. (Refer to W2-1-6.)

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >

Removal of Lift Arm Cylinder

CAUTION: Lift cylinder (8) weight:
ZW80 : 37 kg (82 lb)
ZW90 : 44 kg (97 lb)

1. Attach a nylon sling onto lift arm cylinder (8). Hold lift arm cylinder (8).
2. Disconnect hoses (14, 15) from lift arm cylinder (8). Cap the open ends.
   : 27 mm
3. Remove bolt (13), spring washer (12) and washer (11) from pin (10).
   : 19 mm

CAUTION: Metal fragments may fly off when a hammer is used. Wear necessary protection, such as goggles, helmets, etc in order to prevent personal injury.

4. Remove pin (10) from lift arm cylinder (8).
5. Remove bolt (7), spring washer (6) and washer (5) from pin (4).
   : 19 mm

CAUTION: Metal fragments may fly off when a hammer is used. Wear necessary protection, such as goggles, helmets, etc in order to prevent personal injury.

6. Remove pin (12) from front frame (2).
7. Remove lift arm cylinder (8) and shims (9) (2 used) on the lift arm cylinder rod side from lift arm (1) and front frame (2).
8. Remove another cylinder in the same way.

Installation of Lift Arm Cylinder

CAUTION: Lift cylinder (8) weight:
ZW80 : 37 kg (82 lb)
ZW90 : 44 kg (97 lb)

1. Attach a nylon sling onto lift arm cylinder (8). Hold lift arm cylinder (8).
2. Fit the pin (4) hole on the bottom side of lift cylinder (8) and on the front frame.

CAUTION: Metal fragments may fly off when a hammer is used. Wear necessary protection, such as goggles, helmets, etc in order to prevent personal injury.

3. Install pin (4) to front frame (2) with washer (5), spring washer (6) and bolt (7).
   : 19 mm
4. Connect hoses (14, 15) to lift arm cylinder (8).
   : 27 mm
5. Start the engine. Extend the piston rod of lift arm cylinder (8). Fit the pin (10) hole on lift arm cylinder (8) and the lift arm. Install shims (9) (2 used) to the rod side of lift arm cylinder (8).
6. Install pin (10) to lift arm cylinder (8) with washer (11), spring washer (12) and bolt (13).
   : 19 mm
7. Install another cylinder in the same way.

CAUTION: Bleed air from the cylinder after completing the work. (Refer to BLEED AIR FROM HYDRAULIC CIRCUIT on W1-1-3.)

MidWestTech | Hitachi ZW80, ZW90 Wheel Loader Workshop Service Manual | Public... Order the manual at mid-west-tech.com >